2008 Fall Meeting
Search Results

Cite abstracts as **Author(s) (2008), Title, *Eos Trans. AGU, 89*(53), Fall Meet. Suppl., Abstract xxxxx-xx**

Your query was:
s31a-1877

HR: 0800h
AN: **S31A-1877**
TI: Mapping the radially anisotropic crustal velocity structure of NW Canada with ambient- noise tomography
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AB: We use ambient-noise cross-correlation to image crustal seismic-velocity structure in NW Canada. Our focus area surrounds the CANOE (CAnadian NOrthwest Experiment) array, a 16-month deployment of 59 broadband seismic stations. The geometry of the CANOE array was designed for studying the processes of continental accretion and the characteristics of continental lithosphere, and as such it extends from the Northern Cordillera on the west into the Archean Slave province to the east, crossing crustal terrains that span ~4 Ga of Earth history. We expand our study area westward and eastward by including 42 broadband stations from the Canadian National Seismograph Network and the POLARIS network. We estimate the Green's function for each pair of stations by cross-correlating day-long time series of ambient noise in the time period July 2004 -- June 2005. We observe fundamental-mode Rayleigh waves on cross- correlated vertical-component records and Love waves on the transverse components. All azimuths are well represented by the station coverage in this region, and the signal-to-noise ratios of the impulse responses are strongest for paths perpendicular to the Pacific coastline. We determine group velocities for the surface waves in the period range 5--30 s. Laterally, group velocities vary by as much as ±15% at the shortest periods and ±6% at longer periods, with the fastest velocities found within the Slave province and very slow velocities associated with thick sedimentary layers at short periods. We invert the group-velocity values (>2500 interstation paths) for 3-D radially anisotropic shear-wave velocity within the crust. The sensitivity kernels depend strongly on the assumed elastic structure, and we therefore use local kernels to account for the effects of laterally variable sedimentary

structure. The model is further constrained by estimates of crustal thickness from receiver functions, LITHOPROBE reflection profiles, and CRUST2.0. We investigate whether the group-velocity data require anisotropic velocity structure or if they are equally well fit by isotropic velocity.
DE: 7205 Continental crust (1219)
DE: 7208 Mantle (1212, 1213, 8124)
DE: 7218 Lithosphere (1236)
DE: 7255 Surface waves and free oscillations
DE: 7270 Tomography (6982, 8180)
SC: Seismology [S]
MN: 2008 Fall Meeting

New Search